International Civil Aviation Organization
CAR/SAM Planning and Implementation Regional Group (GREPECAS)
Fourth Meeting of the Programmes and Projects Review Committee (PPRC/4)
Lima, Peru, 12 - 14 July 2016

Agenda Item 3: Review of GREPECAS Programmes and Projects
3.6 Projects under the AIM Programme (B0-DATM)

REVIEW OF THE AIM PROGRAMME (B0-DATM) PROJECTS

(Presented by the Secretariat)

SUMMARY

This paper makes reference to the GREPECAS Programmes and Projects under the AIS to AIM transition context, presenting the progress made by States, Territories and International Organizations in CAR and SAM Regions, regarding the electronic process and the digital management of aeronautical information and data with the Aeronautical Information Exchange Model (AIXM) implementation, the Quality Management System (QMS) implementation and the availability of the Electronic Terrain and Obstacle Data (e-TOD) set by users.

References:

- Annex 15 – *Aeronautical Information Services*
- ICAO Roadmap for AIS to AIM transition
- Seventeenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/17) (Cochabamba, Bolivia (Plurinational State of), 21 to 25 July 2014)
- Report of the Third NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/3), Mexico City, Mexico, 4 to 6 April 2016
- Report of the Third Meeting of the Programmes and Projects Review Committee (PPRC/3), Mexico City, Mexico, 21 to 23 July 2015
- Report of the SAM/AIM/8 Meeting

Strategic Objective(s)	*B - Air Navigation Capacity and Efficiency*

1. Introduction

1.1 Under this paper, the status of the activities under Programme G concerning Aeronautical Information Management (AIM) in the CAR and SAM Regions is presented, in its respective projects: G1 - *Developments for the supply of electronic terrain and obstacle data (e-TOD) in the States* and G2 - *Development of quality specifications applicable to the digital AIM environment*, for the CAR Region, and projects G1 - *Implementation of the provision of electronic terrain and obstacle data (e-TOD)*, G2 - *Implementation of aeronautical information exchange systems (AIXM)*, and G3 - *Implementation of the quality management system in AIM units*, for the SAM Region, which details are presented in **Appendices A and B** to this paper.

1.2 The project activities were aligned with the regional air navigation priorities and objectives defined for the CAR and SAM Regions and considered in the Bogota and *Port-of-Spain* Declarations, respectively. On the other hand, a coherent approach to the specified priority by the Aviation System Block Upgrade (ASBU) methodology was considered in the AIM Project activities.

1.3 It is also important to emphasize that eTOD data represents a significant support for States to the Performance-Based Navigation (PBN) project, regarding the PANS-OPS and aeronautical charts.

2. Analysis

CAR Region

2.1 As a related aspect to the expressed in paragraph 1.2, reference is made that based on the AIM objectives showed in the Air Navigation Services (ANS) context of the "*No Country Left Behind*" (NCLB) Strategy programme and under the ANI/WG follow-up, 2 technical assistances were held to Eastern Caribbean States (E/CAR) and to Guatemala.,. In each case Projects G1 and G2 topics in matter were addressed.

2.2 In support to the Project G1 - *Developments for the supply of electronic terrain and obstacle data (e-TOD),* an ICAO CAR/SAM electronic Terrain and Obstacles Data (eTOD) Seminar was held in Mexico City, Mexico, from 23 to 25 November 2015, at the ICAO NACC Regional Office, addressed by Mr. Gilbert Lasnier, who is the ICAO Headquarters specialist in geographic information systems and responsible for the ICAO Geographical Information System (GIS) development, maintenance and evolution in the ICAO Portal. The Seminar was conducted to support States in the elaboration and progress of their National Action Plans complementing what is indicated in Annex 15 - *Aeronautical Information Services*. and Doc 9881 - *Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information (Disclaimer),* also an option to use drones for the survey of Area 2 and 3 was presented. Additionally, the establishment of Letter of Agreement (LoAs) between States and International Organizations was again promoted to collaborate in the eTOD implementation. It is important to note that some States continue reporting that have initiated their eTOD Action Plans, however, the progress is minimum and in most of the cases is null. See the following table:

State (UN Code)	States eTOD Action Plan progress %
ATG (PIARCO)	0
BHS	0
BRB	25
BLZ (COCESNA)	0
CRI	33
CUB	40
DOM	33
SLV	0
GRD (PIARCO)	0
GTM (COCESNA)	15
HTI	0
HND (COCESNA)	0
JAM	15
MEX	35
NIC	20
KNA (PIARCO)	0
LCA (PIARCO)	0
VCT (PIARCO)	0
TTO (PIARCO)	33

2.3 Regarding the implementation targets for AIM transition Phase 1, which includes Project G2 - *Development of quality specifications applicable to the digital AIM environment*, States who have implemented or started the Quality Management System (QMS) implementation process, have had 83% of progress as established in the *Port-of-Spain Declaration* (Trinidad and Tobago, April 2014).

2.4 Some CAR States where AIS/AIM functions are conducted in accordance with the basic local requirements, as in the case of having a single aerodrome and a simple structure of airspace, are under the process of integration to be part of a single QMS AIM System formed by several States, as the E/CAR States case following COCESNA´s Model in Central America, as well as Curaçao that has expressed its interest in following this same model.

2.5 Since 2013, necessary coordination has been conducted with Trinidad and Tobago to establish modifications to the LoAs with the existing States for the elaboration of the Integrated Aeronautical Information Package (IAIP) and integrate them into the AIM-QMS implemented by Trinidad and Tobago (in process of certification by 2016). On the other hand, COCESNA as part of its AIM-QMS (already certified) is extending the benefits of this system to those States that have been integrated as information providers and data validation, using the procedures and processes, as well as the required formats for the QMS in each case, under the respective LoAs. In both cases the IAIP is already produced by both, Trinidad and Tobago and COCESNA.

2.6 Additionally, it can be indicated that more States in the Region have implemented or have started the QMS implementation process. See the following table:

State	% Implementation June 2016
ATG (PIARCO)	85
BHS	0
BRB	85
BLZ (COCESNA)	100
CAN	CERTIFIED
CRI	CERTIFIED OTIFICADO
CUB	CERTIFIED
DOM	CERTIFIED
SLV (CEPA)	25
USA	CERTIFIED
GRD (PIARCO)	85
GTM	100 WITHOUT CERTIFICATION
HTI	0
HND (COCESNA)	100
JAM	25
MEX	CERTIFIED
NIC	100 WITHOUT CERTIFICATION
KNA (PIARCO)	85
LCA (PIARCO)	85
VCT (PIARCO)	85
TTO (PIARCO)	85

2.7 The following generalized difficulties reported by States continue, highlighting the information related with Project G1 and G2.

Id.	Main Difficulties Identified for the Transition from AIS to AIM
1	Implementation of Phase 1 (consolidation); in some States the implementation of Step 17 (QMS) is not applicable (N/A), for having a very basic AIS (AIM) structure, with only one Officer
2	Tight timelines for Phase 2 and Phase 3 implementation , will be between 2016 and 2020, respectively
3	Financial constraints
4	Resources availability (humans and materials) and knowledge (required expertise) Training and development of required competencies foe the experts and to assess the most relevant aspects for the AIM tasks.
5	Lack of detailed ICAO guidance material; AIM documentation with detailed descriptions of steps to assist States with the implementation processes and the requirement to amend ICAO Annexes 15 and 4, documents and manuals to include AIM requirements
6	Commitment through Letters of Agreement in accordance with the data originators and the adoption of appropriate arrangements with all data originators (National Regulations)

Conclusion

2.8 Important progress mainly on the QMS implementation and less in the eTOD has been observed within the CAR Region, in order to improve the programmes, it is suggested the need to increase the number of States qualified human resources to participate in the AIM Implementation programmes with continuous assistance of the NACC and SAM ICAO Regional Offices from the respective projects created for this purpose.

2.9 As an emerging important topic, it is suggested that the Meeting note the System Wide Information Management (SWIM) as priority for the evolution of the Global ATM System that incorporates the basic requirements of SESAR, Next-Gen, CARATS, and other national and regional programmes, for which the AIM is a fundamental part in support of all the existent and emerging systems dependent on data in electronic formats. Also, as a consequence the development of an AIM Operational Concept that will move beyond the present AIS-AIM Roadmap target of "digital and/or electronic AIM products" to a more integrated and related with the AIM extended domain named "Information Management" (IM), which is becoming an urgent task in direct support to ATM and SWIM users.

SAM Region

Project G1: Implementation of the provision of electronic terrain and obstacle data (e-TOD)

SAM States Progress on e-TOD Implementation

AREA 1 - Terrain

2.10 Information regarding Area 1 requirements compliance on terrain survey was collected, with the following results:

a) **Argentina, Brazil, Chile, Colombia, French Guyana, Panama, Peru and Venezuela** have a Digital Elevation Model for the development of Area 1. The progress registered was from 49% to 56%, the amount of States within the Region with Digital Models **Increase 7%. Remaining 44% to be completed in 2016.**

b) Regarding the compliance of Table 8-1 of Annex 15 for the terrain requirements of Area 1, the following States are complying with the requirement: **Argentina, Chile, French Guyana, Panama, Peru and Venezuela.** The compliance progress registered in the Region is from 28% to 42%. As Peru has partial compliance, it has not been computed until it fully meets the requirement. **Increase 14%. Remaining 58% to be completed in 2016.**

c) **Regading** the compliane of Standard ISO 19119 for the Digital Model, the following States **Argentina, Chile, Colombia, French Guyana, Panama, Peru and Venezuela** report the compliance in the Region from 42% to 57%. **Increase 15 %. Remaining 43% to be completed in 2016.**

AREA 1 - Obstacles

2.11 Information regarding Area 1 requirements compliance on obstacles survey was collected, with the following results:

a) Regarding the obstacle database disposition that encompasses Area 1, the following States **Argentina, Brazil, Colombia, French Guyana Peru and Uruguay** comply with the requirement, having a compliance percentage in the Region from 35% to 43%.
Increase 8%. Remaining 57% to be completed in 2016.

b) **Argentina, Brazil, Chile, Panama, Peru, Uruguay and Venezuela** comply with the obstacle requirements establised in Table 8-1 for Area 1, the implementation

level in the Region goes from 21% to 50%. **Increase 29%. Remaining 50% to be completed in 2016.**

AREA 2 - Terrain

2.12 Regarding Action Plans to obtain electronic terrain data in Area 2a, **Argentina, Bolivia, Brazil, Chile, Colombia, Panama, Paraguay, Peru and Uruguay** reported progress, moving the Region from a 49% to a 64% of compliance. **15% increase. Remaining 36% to be completed in 2016.**

2.13 When analysing the compliance in the provision of terrain data corresponding to take-off trajectory, States that reported to have developed an Action Plan are **Argentina, Brazil, Chile, Colombia, Panama, Paraguay, Peru and Uruguay**, moving the Region from a 42% to a 56% of compliance. **14% increase. Remaining 44% to be completed in 2016.**

2.14 Furthermore, there has been little progress in the Region regarding the provision of electronic terrain data corresponding to the area demarcated by the lateral extensions of the aerodrome obstacle limitation surfaces. **Argentina, Bolivia, Brazil, Chile, Colombia, Panama and Peru** showed some implementation progress moving from 35% to 50%. **15% increase. Remaining 50% to be completed in 2016.**

AREA 2 - Obstacles

2.15 **Argentina, Bolivia, Brazil, Chile, Colombia, Panama, Paraguay and Peru** developed Action Plans for the compilation of data in Area 2a, referring to obstacles that penetrate obstacle limitation surfaces in accordance with Appendix 8 of Annex 15, which indicates a progress from 49% to 56% in the Region. **7% increase. Remaining 44% which should have been completed in 2015.**

2.16 Likewise, **Argentina, Brazil, Chile, Colombia, Panama, Paraguay and Peru** reported progress in their Action Plans for the provision of electronic data on objects protruding flat slopes of 1,2% in respect of the take-off trajectory, thus making a progress in the Region's implementation from 42% to 50%. **8% increase. Remaining 50% which should have been completed in 2015.**

2.17 Regarding the provision of electronic data in aerodrome obstacle limitation surfaces, **Argentina, Bolivia, Brazil, Chile, Colombia, Panama, Paraguay and Peru** developed Action Plans for the compliance of the requirement; the progress in the Region has been from 42% to 56%. **14% increase. Remaining 44% which should have been completed in 2015.**

2.18 Equally in the Region, **Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Panama, Paraguay, Peru, Suriname and Uruguay** have defined an e-TOD Implementation Technical Specifications Manual. **84% increase. Remaining 16% which should have been completed in 2015.**

e-TOD Training in the SAM Region

2.19 Regarding the e-TOD training programme, Colombia informed about their training programmes; this results in a progress from 42% to 49% in the Region. **7% increase. Remaining 51% to be completed in 2016.**

2.20 Regarding the inclusion of training operational concepts, a progress from 49% to 56% was confirmed in the Region. **7% increase. Remaining 44% to be completed in 2016.**

2.21 Regarding the equipment and necessary programmes to manage e-TOD information, the Region has moved from 49% to 56% in the compliance of this requirement. **7% increase. Remaining 44% to be completed in 2016.**

2.22 Regarding the Service Level Agreements (SLA), there has been no progress since data providers have been reluctant to sign agreements with AIM Offices, besides some regulations restrictions from some States. The main reason is the requirements demanded from the AIM, which are necessary to comply with SARPs related to data quality, precision and integrity. In this matter, the Region made no progress during this year. **The current implementation is of 21% only.**

2.23 Other progress related to this Project is the implementation of **Geographic Information Systems (GIS), with an execution percentage of 56%** in States in the Region.

2015 State	% of States with Automated Systems or GIS = 56%	% of States with Guidance Document and approved Action Plan = 100%	% of States that have established SLA Agreements = 21%
ARG	YES	YES	YES
BOL		YES	
BRA	YES	YES	
CHI	YES	YES	
COL	YES	YES	
ECU		YES	
FGY	YES	YES	
GUY		YES	
PAN	YES	YES	
PAR		YES	
PER	YES	YES	YES
SUR		YES	
URU	YES	YES	YES
VEN		YES	

Conclusions on the SAM Region Implementation of Project G1 – Provision of electronic terrain and obstacle data (e-TOD)

2.24 The Meeting should encourage States to establish communication channels with AIM data providers to increase Service Level Agreements (SLA) in States that have not commenced and they should be completed in those States that have begun their development. This is a critical component for traceability and data quality which has a direct impact in quality processes. In this regard, it is necessary to demand from the different data providers to comply with the AIM requirements supported by SARPs or national regulations in order to forward this information and data to users complying with ICAO requirements.

2.25 In reference with the e-TOD implementation, the implementation date for on ground leverage and obstacles for Area 2 was 12 November 2015, but unfortunately most States of the Region have not comply with it. The Secretariat has sent letters to request the capacity of the States to comply with this STANDARD, but regrettably no reply has been received. **It should be noted that, since the content of Annex 15, Chapter 10, 10.1.5 is a STANDARD, its non-compliance is currently considered a deficiency of the State.**

2.26 SAM Region equipment and training progress have been held and it is necessary to keep e-TOD evolution following implementation, and in this regard States are encouraged to send their experts to held workshops and/or meetings in order to train regional experts. Project G1 description is shown in **Appendix B1** to this Working Paper.

Project G2 - Implementation of Aeronautical Information Exchange Systems (AIXM)

2.27 With regard to the Project on the Implementation of Aeronautical Information Exchange Systems (AIXM), an important progress has been achieved during this year.

2.28 In this sense, a Project Coordinator has been designated due to lack of coordinator. The current Project G2 and Project G1 coordinators have been working in coordination in order to address AIM transmission data formats and models and important progress has been achieved during 2015 and the first half of 2016.

2.29 Also, the AIXM Action plan was defined and it has been expressed in the Project G2 description, presented in **Appendix B2** to this working paper.

SAM Region Project G2 implementation – Aeronautical Information Exchange Model (AIXM) Conclusions

2.30 This Project progress conclusion is very encouraging. Work is being developed with Peru and Uruguay to go ahead with this Project.

2.31 Additionally, with the support of a SIP, an AIXM Seminar was carried out, and the AIXM Manual is already available in Spanish as a reference document.

2.32 With the support of RLA/06/901 Project, a Database Seminar is scheduled for November 2016 in order to create a regional strengthened structure on AIM information exchange in an electronic environment.

Project G3 - Assessment and development of QMS applied to AIM in SAM States

2.33 This Assessment and development of QMS Project for processes that manage AIM dependencies have had very important progress in the required activities before certification, and concrete progress on certifications has been made, which is the established required objective.

2.34 **First roadmap phase on AIS to AIM transition has achieved 84% progress**; nevertheless, States that have delayed on Quality AIM certification are delayed to pass to the second digital phase. Remaining 16% to be completed in 2016.

2.35 The Secretariat has been informed that during 2015, Peru and Uruguay have certified. With regard to Argentina, no information on certification has been available, although the process was well advanced. Unfortunately, Colombia and Venezuela continue without certifying their AIM systems, while the more concerning delay in the quality implementation is identified on Bolivia, Guyana and Suriname systems. Project G3 description is presented in **Appendix B3** to this working paper.

Conclusions on the G3 Project Implementation in the SAM Region: Quality Management System Implementation in the AIM offices in the SAM Region

2.36 The senior management is still the main component identified as articulator in the progress of Quality Management System Certification in the States. When the high-level management is involved in obtaining the systems quality Certification and its processes, helps to detach the barriers in the management delaying the implementation.

2.37 At regional level, the *Declaration of Bogota* obtains a commitment of the high-level management to certify quality in the AIM processes. This commitment needs to be replicated at a national level to obtain a Certification in the committed term.

3. Suggested Actions

3.1 The Meeting is invited to:

a) take action on the information provided in this working paper;

b) analyze the document and Appendices A for the CAR Region and Appendices B for the SAM Region respectively, with the purpose to approve the progress and the implementation of the mentioned documents;

c) consider the progress obtained in the AIM projects,

d) provide the necessary human resources for the efficient development of the projects in the CAR Region; and

e) agree other actions as deemed necessary.

- - - - - -

APPENDIX A
CAR REGION PROJECTS

CAR Region	**PROJECT DESCRIPTION (DP)**	DP N° G1	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Raúl Martínez)	Developments for the provision of electronic terrain and obstacle data (e-TOD) (CAR) Project coordinator: Alfredo Mondragón (COCESNA) Experts contributing to the project: None	26/09/11	31/12/20
Objective	Support the implementation of the provision of e-TOD datasets by CAR States and provide States with guidance on e-TOD implementation Areas 1, 2, 3 and 4.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to the provision of electronic terrain and obstacle data. It contemplates guidance for the drafting of an action plan and guidance for e-TOD implementation to support the Development of Digital Terrain Models (DTMs) to support the production of electronic aeronautical charts and other products required by the users.		
Metrics	Indicator: % os States with eTOD data sets implemented Support to Metric: Number of States with eTOD implemented		
Strategy	The conduction of project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (and other electronic media). The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidate d document for analysis, review and approval, and for presentation to the GREPECAS PPRC by the programme coordinator.		
Goals	Develop a Guidance Document in Spanish for the e TOD implementation Develop a document with the original specifications described in the English document ICAO NACC Regional Office to elaborate a survey to CAR States/Territories in accordance to e TOD implementation process compatible with ICAO NCLB strategy.		
Rationale	Compliance of SARPS Annex 15 and Annex 4 and ICAO Document 9881“Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information (Disclaimer)”. Availability of information of eTOD process development to formulate Regional strategies in support to those States where it is necessary.		
Related projects	This project is related to projects G2 “Assessment and development of QMS applied to AIM in CAR States”		

Project deliverables	Relationship with the performance-based regional plan (PFF)	Responsible party	Status of Implementation	Delivery date	Comments
Develop Guidance Document with the e TOD project objectives (Part 1)	PFF: CAR AIM/02	Alfredo Mondragn COCESNA		August 2012	Completed on time
Develop Guidance Document with the e TOD project objectives (Part 2)	PFF: CAR AIM/02	Alfredo Mondragon COCESNA		April 2013	Completed on time
ICAO NACC Regional Office to elaborate a survey and data analysis to CAR States/Territories in accordance to e TOD implementation process compatible with ICAO NCLB strategy.	PFF: CAR AIM/02	Raul Martinez ICAO NACC		December 2017	Activity in progress
Resources required	Designation of experts in the execution of deliverables. Commitment by States to support the designated Coordinators and experts.				

Grey *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

CAR Region	PROJECT DESCRIPTION (DP)	DP N° G2	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Raul Martinez)	Development of support material on QMS applied to AIM in CAR States Project coordinator: Enrique Echarri (Cuba) Experts contributing to the project: None	September 2012	December 2016
Objective	Elaborate the applicable guidance to the Quality Management System (QMS) in support to the AIM digital/electronic environment in the CAR Region.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to quality management in AIM services of the Region. Drafting of an action plan and guides for the implementation of QMS in support to the digital/electronic environment of AIM.		
Metrics	Indicator: % of Staes with QMS implemented Support to Metric: Number of States with QMS implemented		
Goals	Develop a survey to determine which States require support from ICAO NACC for the QMS implementation.		
Strategy	Project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (and other available electronic media). The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and works to be executed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.		
Rationale	The quality management system in AIM services must give users the necessary assurance and confidence that the aeronautical information/data being distributed meets quality requirements in terms of accuracy, resolution and integrity. It is necessary for ICAO to have up-to-date information to assist States in the implementation process of the QMS.		
Related projects	This project is related to projects G1 “Developments for the provision of terrain and obstacle data eTOD”		

Project deliverables	Relationship with the performance-based regional plan (PFF)	Responsible party	Status of implementation*	Delivery date	Comments
Develop Guidance for the QMS-AIM implementation based on ICAO requirements	PFF: CAR AIM/01	ICAO Coordinator		31 December 2014	Completed on time: ICAO Doc 9830 (final version). It was distributed to States in different Regional CAR Meetings, via email to AIS Officials (AIM), and it was also distributed to States visited in different mission
Conduct survey to determine which States require support from ICAO NACC for the QMS implementation, in continuity to the AIM goals of the *Port-of- Spain Declaration* and the strategies proposed by the ICAO NCLB	PFF: CAR AIM/01	Project Coordinator		31 December 2016	It is considered the elaboration of statistics analysis for the development of the proposals of the resultant actions.
Resources required	Designation of experts in the execution of some deliverables. Commitment by States to support the Coordinators and experts.				

Grey *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

- - - - - - - -

APPENDIX B1

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G1	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Jorge Armoa)	Implementation of the provision of electronic terrain and obstacle data (e-TOD) (SAM) Project coordinator: Juan González (Uruguay) Experts contributing to the project: SAM/AIM IG	26/09/11	31/12/15
Objective	Support the implementation of the provision of e-TOD by SAM States, and provide guidance to States on GIS acquisition and management.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to the provision of electronic terrain and obstacle data. It contemplates the drafting of an Action plan and guides for the implementation of e-TOD to support developments in the provision of electronic terrain and obstacle data for the evolution of digital terrain models (DTM) to gradually improve electronic aeronautical charts and other similar products, with the support of tools such as the geographical information systems (GIS).		
Metrics	• Number of States that have implemented GIS or automated systems. • Guide-document with action plan approved. • Number of States that establish SLAs. • Main Airports with Area 2 (eTOD) Surveyed		
Strategy	The conduction of project activities will be coordinated among project members, the project coordinator, and the programme coordinator, mainly through teleconferences (GoToMeeting application) and meetings that may be held within other scheduled events, based on the activities of the work programme. The project coordinator will coordinate with the programme coordinator for the inclusion of additional experts, if warranted by the tasks and works to be executed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the programme coordinator.		

Goals	Draft the Guide-document containing the objectives of the e-TOD project. 2012. Define the technical and e-TOD project specifications. 2012. Prepare the document containing the e-TOD technical specifications. 2012. Guide on the acquisition of a geographical information system (GIS). 2012. GIS implementation Manual. 2012. Available Methodology and tools for surveying Area 2. 2013 Main International Airports with Area 2 surveyed. 2016
Rationale	Compliance with the SARPs of Annexes 15 and 4 to facilitate the execution of performance-based air operations and to advance with the AIS-AIM Transition Roadmap. A close relationship with other projects is needed in order to obtain the operational requirements of the aforementioned applications and their respective tentative dates of implementation.
Related projects	This project is related to Project G3 "Implementation of the Quality Management System in the AIM units" in the CAR/SAM States.

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	**Status of implementation***	**Delivery date**	**Comments**
Survey on the status of eTOD implementation.	PFF: SAM AIM/02	Juan González Uruguay		30/11/2011	Finalised on schedule.
Generate follow-up report.	PFF: SAM AIM/02	Juan González Uruguay		30/04/2012	Finalised on schedule.
Develop Guide-Document with the objectives of the eTOD project.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalised on schedule. Delivered 30/09/2012
Define the technical specification of the eTOD project.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalised on schedule. Delivered 30/09/2012

Develop the document with the eTOD technical specifications.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalised on schedule. Delivered 30/09/2012
Guide for the acquisition of a geographical information system (GIS).	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Finalised on schedule.
GIS implementation manual.	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Finalised on schedule.
Present to States the different options available for surveying Area 2	ASBU:BO30 DATM	ICAO Coordinator		26/07/2013	Finalised on schedule.
Guía para desarrollar un Modelo Digital de Terreno (MDT) o Modelo Digital de Elevación (MDE)	PFF: SAM AIM/02 ASBU:BO30 DATM	Grupo Ad Hoc Reunión SAM/AIM/7		30/03/2015	Completada en fecha
Completar 50% de los estados implantación de MDT y/o MDE antes de la Reunión SAM/AIM/7	PFF: SAM AIM/02 ASBU:BO30 DATM	Estados		12/11/2015	Completado el 49% en fecha.
Disponibilidad de programas para gestionar la información e-TOD.	PFF: SAM AIM/02 ASBU:BO30 DATM	Estados		12/11/2015	Completado el 49% de los Estados en fecha.
Plan de Acción para datos electrónicos sobre **terreno** en Area 2	PFF: SAM AIM/02 ASBU:BO30 DATM	Estados		12/11/2015	Completado el 49% de los Estados en fecha.
Plan de Acción para datos electrónicos sobre **obstáculos** en Area 2	PFF: SAM AIM/02 ASBU:BO30 DATM	Estados		12/11/2015	Completado el 42% de los Estados en fecha.
Resources required	Designation of experts in the execution of some of the deliverables. More commitment by States to support the designated Coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX B2

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G2	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Jorge Armoa)	G2: Implementation of Aeronautical Information Exchange Systems (AIXM) (SAM) Project coordinator: Eng. Karina Calderón Experts contributing to the project: SAM/AIM/IG	01/03/12	01/12/15
Objective	Prepare an action plan to be implemented by States for the application of the aeronautical information/data exchange model.		
Scope	The scope of the project contemplates the evaluation and identification of automation levels associated to the integration of the aeronautical information and data exchange model in the Region, through surveys, the identification of database providers, and the follow-up on the development of SARPs on this matter.		
Metrics	Number of States that have implemented an Action Plan for data exchange systems.		
Goals	Complete all the documentation needed by States before 31/12/15.		
Strategy	Project activities will be coordinated among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (GoToMeeting application). Seminars/meetings are scheduled in accordance with work programme activities. The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. Coordination will take place between the CAR and SAM Regions. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.		

Rationale	Integrate aeronautical information so as to permit the interoperability of ATM systems while preserving safety, applying the information exchange models.
Related projects	This project is related to Project G3 "*Implementation of the Quality Management Systems in the AIM units in SAM States*".

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	***Status of Implementation**	**Delivery date**	**Comments**
Survey of the provision of IAIP, using a table.	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting.
Circulation of IAIP survey to States	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting.
Collection and updating	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting.
Collection of experiences in SAM States with the electronic AIP	D-ATM	ICAO coordinator		16/03/12	Finalised on schedule at the SAM/AIM meeting.
Develop AIXM action plan	D-ATM	ICAO coordinator		24/04/15	Finalised on schedule.
AIXM documentation collection	D-ATM	ICAO coordinator		22/05/15	Finalised on schedule.
AIXM documentation translation	D-ATM	ICAO		10/07/15	Finalised on schedule.

AIXM documentation revision	D-ATM	ICAO coordinator		21/08/15	Finalised on schedule.
Documentation validation	D-ATM	ICAO coordinator		18/09/15	
Develop document describing AIXM tests steps	D-ATM	ICAO coordinator		09/10/15	
AIXM tests	D-ATM	ICAO coordinator		30/10/15	
Transmission and reception of tests results data	D-ATM	ICAO coordinator		13/11/15	
AIXM seminar	D-ATM	ICAO coordinator		02/10/15	Finalised on schedule.
AIXM management concept guidance material	D-ATM	ICAO coordinator		27/11/15	
Resources required	Designation of experts in the execution of some of the deliverables. Commitment by States to support the coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*

APPENDIX B3

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G3	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Jorge Armoa)	Assessment and development of QMS applied to AIM in SAM States Project coordinator: Oscar Dioses (Peru) Experts contributing to the Project: SAM/AIM IG David Díaz (Peru)	03/10/11	01/11/16
Objective	Implement guides applicable to the quality management system in a digital/electronic AIM environment in the SAM Region, based on the regional performance objectives of the SAM performance-based implementation plan.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to quality management in AIM services in the Region. Drafting of an action plan and guides for the implementation of QMS in a digital/electronic AIM environment.		
Metrics	Percentage of States with ISO 9001:2008 QMS certification.		
Goals	50% of States with the ISO standard 9001:2008 implemented by 2013, and certified by 2014.		
Strategy	Project activities will be coordinated among project members, the project coordinator, and the programme coordinator, mainly through teleconferences (GoToMeeting application) and meetings that may be held within other scheduled events, based on the activities of the work programme. The project coordinator will coordinate with the programme coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the programme coordinator.		

Rationale	The quality management system in AIM services must provide users the required guarantee and assurance that the aeronautical information/data distributed meets quality requirements in terms of accuracy, resolution and integrity. There needs to be a close relationship with other projects in order to collect the operational requirements of the aforementioned applications and their respective tentative dates of implementation.
Related projects	This project is related to Projects G1 "Implementation of the provision of electronic terrain and obstacle data e-TOD" and G2 "Implementation of Aeronautical Information Exchange Systems (AIXM)".

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	**Status of imple-mentation***	**Delivery date**	**Comments**
Prepare surveys to establish the levels of compliance and implementation of AIM-QMS based on ICAO guides	PFF: SAM AIM/01	ICAO coordinator		25/11/11	Finalised as scheduled.
Circulate surveys to the States	PFF: SAM AIM/01	ICAO coordinator		17/02/12	Finalised as scheduled.
Collect and tabulate the information of the States	PFF: SAM AIM/01	ICAO coordinator		13/04/12	Finalised on 30/03/12.
Description of steps for QMS implementation.	PFF: SAM AIM/01	SAM/AIM/WG		30/03/12	Finalised as scheduled.
QMS self-assessment questionnaire	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	Finalised as scheduled.

Template with QMS assessment results	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	Finalised as scheduled.
QMS implementation plan	PFF: SAM AIM/01	David Diaz RLA/06/901		19/10/12	Finalised as scheduled.
QMS procedures and preventive actions.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
QMS internal audit procedure.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Procedure for controlling AIS service management system records	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Procedure for drafting QMS documents.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Service control procedure – QMS non-conforming products.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Procedures for controlling the documents of the AIS service management system.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Model SLA with service providers to ensure the quality of the information and data exchange.	PFF: SAM AIM/01	Juan J. González Uruguay		19/10/12	Finalised as scheduled.
CRC Cyclic Redundancy Check Set of 32 bit.	B0 DATM	Juan J. González Uruguay		30/03/2015	Finalised as scheduled.
AIM Training Programmes	B0 DATM	Juan J. González Uruguay		30/03/2015	Finalised as scheduled.

Collect certifications and produce report on the status of ISO 9001:2008 certifications in the SAM Region	PFF: SAM AIM/01	ICAO coordinator		01/11/16	Brasil, Chile, Ecuador, French Guyana and Paraguay Certified ISO 9001:2008
Resources required	Designation of experts in the execution of some of the deliverables. More commitment by States to support the designated coordinators and experts.				

**Grey* *Task not started*
Green *Activity underway as scheduled*
Yellow *Activity started with some delay but expected to be completed on time*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required*